

Acute toxicity study of Vilocym Premix (herbal growth promoter for Livestock) in Wistar Albino Rat

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Abstract

An experimental study with the objective of safety evaluation of Vilocym Premix, herbal growth promoter for Livestock (supplied by Ayurved Ltd., Baddi, India), was done as per standard guidelines of OECD-423 for acute toxicity testing. Vilocym Premix is a scientifically developed combination of herbs that contains herbal ingredients namely *Azadirachta indica*, *Curcuma longa* & many more alongwith natural zeolites. The study was done in 3 males and 3 female Wistar Albino rats, which were administered an initial dose of 50 mg/kg body weight followed by dose rates of 300, 500 & 5000 mg/kg body weight of test compound. The animals were observed for signs of convulsions, tremors, circling, depression, excitement and mortality. Body weight was recorded at 0, 7th and 14th day and plasma total protein, albumin; AST and ALT were measured after 3rd day of experiment. No abnormal sign of symptoms were observed in any of the animal fed with Vilocym Premix at the dose rate of 50, 300, 500 & 5000 mg/kg. No mortality was observed indicating safety of herbal premix.

Keywords: Growth Promoter, Herbal, Livestock, Toxicity, Production, Weight gain.

Introduction

Growth and performance in livestock is the key of enhancing overall productivity of animals in terms of live body weight gain, milk production and meat yield. Vilocym Premix (supplied by Ayurved Ltd., Baddi, India) is a herbal growth promoter for bovine, caprine, ovine & swine. Vilocym Premix is a polyherbal formulation. *Azadirachta indica*, *Curcuma longa*, *Solanum nigrum*, *Phyllanthus niruri*, *Trigonella feonum* and many more scientifically well known for their growth promoter and immunomodulator properties (Kiso et al., 1983; Wafaa et al., 2007). *Azadirachta indica* has main role in energy production and protein synthesis; it also help to improve overall growth performance and efficient nutrient utilization in animals. The objective of current experimental trial is to evaluate safety standards of herbal feed premix in Wistar rats as per acute toxicity testing guidelines.

Materials and Methods

Herbal growth promoter Vilocym Premix (supplied by Ayurved Ltd. Baddi India) was tested for acute toxicity as per OECD 423 guidelines (ASTM, 1987). The present study work was conducted at Department of Pharmacology & Toxicology, College of Veterinary and Animal Sciences G.B.P.U.A.T., Pantnagar Uttarakhand, India. 12 male and 12 female Wistar rats were procured

for the experimental trial. Test compound (Vilocym premix) was administered orally to 3 Wistar male and 3 female rats using limit dose in four steps (viz; exposing 3 female rats in 1st step and 3 male rats in the 2nd step to a dose of 50, 300, 500 and 5000 mg/kg body weight). Further, three male rats were taken up and weighed and marked for identification and same procedure was repeated. The test compound was administered orally as per the body weight of individual animal. Following administration of single dose of herbal preparation, animals were observed for the clinical symptoms for 30 minutes, at hourly intervals for next 24 hours and thereafter for total 14 days. The animals were observed for signs of convulsions, tremors, circling, depression, excitement and mortality. Body weight was recorded at 0, 7th and 14th day and plasma total protein, albumin, Aspartate Amino Transferase & Alkaline Phosphatase (ALT & AST) were measured to evaluate the toxicity of the preparation after 3rd day. All the animals are terminally sacrificed for gross necropsy findings.

Results

All the animals were carefully observed for development of any toxic signs or symptoms at different time intervals of 0, 30 minutes, 1, 2, 4, 6, 8 & 12 hrs and then daily for period of 14 days. No abnormal sign

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Table-1: Blood parameters of rats fed Vilocym Premix (50 mg/kg b.wt.) after 3 days

Animal	Total protein (g/dl)	Albumin (g/dl)	Total Cholesterol (mg/dl)	SGOT (U/L)	SGPT (U/L)
F1	4.14	2.15	26.1	85.2	25.4
F2	7.35	3.26	18.7	75.17	21.5
F3	8.87	3.16	33.7	65.5	39.7
M1	7.54	2.71	44.51	77.8	35.4
M2	6.30	2.69	32.2	68.3	37.4
M3	6.45	3.75	27.7	55.7	27.2

Table-2: Blood parameters of rats fed Vilocym Premix (300 mg/kg b.wt.) after 3 days

Animal	Total protein (g/dl)	Albumin (g/dl)	Total Cholesterol (mg/dl)	SGOT (U/L)	SGPT (U/L)
F1	3.44	2.86	28.11	97.55	29.82
F2	5.98	2.46	29.08	82.54	31.78
F3	7.78	3.35	29.7	51.32	35.42
M1	5.67	2.84	22.7	53.37	38.48
M2	5.12	3.66	35.4	67.11	47.69
M3	7.34	2.77	39.2	48.5	46.11

Table-3: Blood parameters of rats fed Vilocym Premix (500 mg/kg b.wt.) after 3 days

Animal	Total protein (g/dl)	Albumin (g/dl)	Total Cholesterol (mg/dl)	SGOT (U/L)	SGPT(U/L)
F1	7.89	3.45	21.5	87.77	49.15
F2	9.07	4.47	27.3	86.67	27.83
F3	7.77	5.63	23.83	57.66	37.58
M1	6.07	3.73	33.17	52.56	47.55
M2	7.89	4.77	35.6	74.6	42.52
M3	5.53	2.11	24.7	69.2	32.46

Table-4: Blood parameters of rats fed Vilocym Premix (5000mg/kg b.wt.) after 3 days

Animal	Total protein (g/dl)	Albumin (g/dl)	Total Cholesterol (mg/dl)	SGOT(U/L)	SGPT(U/L)
F1	3.04	1.86	28.41	95.55	28.82
F2	5.08	2.56	29.7	85.54	32.78
F3	7.18	3.65	21.47	55.32	37.42
M1	5.07	2.14	25.87	57.37	37.48
M2	5.82	3.96	33.54	45.11	33.69
M3	7.14	2.47	39.52	49.25	42.11

of symptoms were observed in any of the animal fed with herbal growth promoter at the dose rate of 50, 300, 500 & 5000 mg/kg body weight. No mortality was observed in any animal indicating its safety. Hence, from the present study it can be concluded that the Vilocym Premix, herbal growth promoter for livestock, is nontoxic at the highest limit dose of 5000 mg/kg body weight (table:4). No adverse effect was seen on the body weight gain and no significant changes in the biochemical parameters from those of normal values of these parameters were observed as compared to control, indicating no adverse effect on the liver at

experimental dose rate of 50, 300, 500 & 5000 mg/kg body weight of test compound (table1, 2, 3&4). Clinical examination of all the rats were normal and necropsy findings does not showed any remarkable observations (Table:5).

Conclusion

Therefore, it is concluded that the administration of Vilocym Premix, herbal growth promoter for livestock is safest & has no adverse effect on growth related & biochemical parameters. It is also inferred that 'Vilocym Premix' being safe at a higher limit dose, belongs to

Table-5: Record of Clinical Examination

Animal ID	Sex	Clinical Symptoms	Duration (Days)
F1-F3	F	NAD-ALL	1-14
M1-M3	M	NAD-ALL	1-14

class 5 or unclassified substances as per Globally Harmonized Classified System (GHC) for chemical substances and mixture indicative of very high LD₅₀ value. Hence, it can be recommended as a safe product for supplementation in basal diet to livestock for regular usage & growth promotion.

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